



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,200	09/11/2003	Gary C. Vanstone	EM-1991	9114
5179	7590	05/10/2005	EXAMINER	
PEACOCK MYERS AND ADAMS P C			NGUYEN, THONG Q	
P O BOX 26927			ART UNIT	
ALBUQUERQUE, NM 871256927			PAPER NUMBER	

2872

DATE MAILED: 05/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/662,200

Applicant(s)

VANSTONE ET AL.

Examiner

Thong Q. Nguyen

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-13 and 15-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-13 and 15-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The present Office action is made in response to the amendment of March 03, 2005. It is noted that in the mentioned amendment, applicant has made changes to the drawings and the claims.

Regarding to the claims, applicant has amended claims 1-2, 5-8, 11, 15-16 and 19 and simultaneously canceled claims 4 and 14. The remaining claims 1-3, 5-13, and 15-20 are examined in this Office action.

Drawings

2. The drawings contained corrected figures 2-3 was received on 3/3/2005. These drawings are approved by the Examiner.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-3 and 5-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

a) Claim 1 is rejected under 35 USC 112, first paragraph because the disclosure, as originally filed, does not provide support for the feature related to the

position/location of the vertex common of the primary, the secondary and the tertiary mirrors as recited in the feature thereof "a vertex...said secondary mirror" (lines 5-6).

b) The remaining claims are dependent upon the rejected base claim and thus inherit the deficiency thereof.

5. Claims 1-3 and 5-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

a) Claim 1 is rejected under 35 USC 112, first paragraph because the disclosure does not provide support for the feature related to the position/location of the vertex common of the primary, the secondary and the tertiary mirrors as recited in the feature thereof "a vertex...said secondary mirror" (lines 5-6). Applicant should note that the inventive device as described in the specification, pages 3-4, and shown in figures 1-3 discloses that the vertex common (22) of the primary mirror 912) and the tertiary mirror (16) is located at a junction of the primary and tertiary mirrors, not at the junction of the primary and the secondary mirror as claimed in the mentioned feature.

b) The remaining claims are dependent upon the rejected base claim and thus inherit the deficiency thereof.

Claim Rejections - 35 USC § 102

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 1-3, 5, 8-9 and 10, as best as understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Wetherell et al (U.S. Patent No. 4,240,707).

The following rejection of the mentioned above claims is made in the assumption that the feature related to the vertex of the primary and tertiary mirrors is located at a junction defined by the primary and tertiary mirrors, not a junction defined by the primary and secondary mirrors as recited in claim 1, last two lines. The feature that the vertex of the primary and tertiary mirrors is located at a junction defined by the primary and secondary mirrors as recited in claim 1, last two lines is subjected to a rejection of 35 USC 112, first paragraph because the specification has never disclosed such a structure.

Wetherell et al disclose an optical device having a set of mirrors for imaging distant objects. The device is able to operate in a range of different wavebands including infrared waveband (see column 4, lines 53+). The three mirrors as described in columns 3-4 and shown in figures 3-4 comprises a concave primary mirror (31), a convex secondary mirror (32) and a concave tertiary mirror (33) wherein the primary mirror and the tertiary mirror share a common vertex and all mirrors share a common axis (34) and wherein the common vertex of the primary and tertiary mirrors is located in a hole/junction defined by the two mentioned mirrors and the vertex is located on the optical axis (34) of the three mirrors. It is

noted that the use of a stop at or near the secondary mirror for the purpose of controlling the light and reducing the image aberrations is disclosed in column 6, lines 6+. In column 4, lines 51+, Wetherell et al teach that the mirrors may be tilted or otherwise altered slightly from the rotational symmetry about the optical axis to achieve a desired level of image quality. The light from the distant object is guided to reflect on the three mirrors and then imaged onto the image plane (36) in which a sensor system is located (see column 3, lines 53+). The three mirrors with concave and convex configurations form an anastigmatic mirror system.

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wetherell et al.

The anastigmatic three-mirror system as provided by Wetherell et al does not disclose that the hole/junction defined by the primary and tertiary mirrors is used to receive a laser or a rod for the purpose of alignment the three mirrors and the primary and tertiary mirrors are diamond turned as a unit.

However, the feature related to the insertion of a rod and/or laser for an alignment purpose as recited in claim 6, and the feature related to the produce of the primary and tertiary mirrors by diamond turned as a unit recited in claim 7, such features are related to method steps for alignment the three mirrors and

making the mirrors, and thus are not given a patentable weight as decided in the Courts which decides that a method step in an apparatus claim is not given a patentable weight.

10. Claims 11-13, 15, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wetherell et al.

Wetherell et al disclose an optical device having a set of mirrors for imaging distant objects. The device is able to operate in a range of different wavebands including infrared waveband (see column 4, lines 53+). The three mirrors as described in columns 3-4 and shown in figures 3-4 comprises a concave primary mirror (31), a convex secondary mirror (32) and a concave tertiary mirror (33) wherein the primary mirror and the tertiary mirror share a common vertex and all mirrors share a common axis (34) and wherein the common vertex of the primary and tertiary mirrors is located in a hole/junction defined by the two mentioned mirrors and the vertex is located on the optical axis (34) of the three mirrors. It is noted that the use of a stop at or near the secondary mirror for the purpose of controlling the light and reducing the image aberrations is disclosed in column 6, lines 6+. In column 4, lines 51+, Wetherell et al teach that the mirrors may be tilted or otherwise altered slightly from the rotational symmetry about the optical axis to achieve a desired level of image quality. The light from the distant object is guided to reflect on the three mirrors and then imaged onto the image plane (36) in which a sensor system is located (see column 3, lines 53+). The three

mirrors with concave and convex configurations form an anastigmatic mirror system.

While Wetherell et al do not clearly set forth a method for making their three-mirror system; however, it would have been obvious to one skilled in the art at the time the invention was made to set forth a set of steps including the step of preparing three mirrors in an order for imaging light from distant objects to a sensor system disposed at the image plane of the three mirrors arranged in such an order, and the step of employing the vertex common to the primary and tertiary mirrors at a junction of the mentioned mirrors at their junction which is located on the optical axis/rotational symmetric axis of the three mirrors and tilting any mirror as necessary to achieve a desired level of image quality.

11. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wetherell et al in view of Chan et al (of record).

The anastigmatic three-mirror system as provided by Wetherell et al does not disclose that the hole/junction defined by the primary and tertiary mirrors is used to receive a laser or a rod for the purpose of alignment the three mirrors and the primary and tertiary mirrors are diamond turned as a unit.

However, the concept of placing the primary and tertiary mirrors on a common substrate and then produced them by a diamond turned process and then using a device utilizing laser for alignment the three mirrors is suggested to one skilled in the art as can be seen in the method for producing three mirrors provided by Chan et al. See columns 6-7. While Chan et al do not suggest that the laser or

Art Unit: 2872

rod is placed in the hole/junction defined by the primary and tertiary mirrors; however, one skilled in the art will recognize that (s)he can position the rod or an alignment system at the hole/junction defined by the primary and tertiary mirrors in the three-mirror system of Wetherell et al for the purpose of alignment the three mirrors due to the convenience and reducing the time of alignment.

12. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wetherell et al in view of Pinson (of record).

The optical device having three mirrors wherein the primary mirror and the tertiary mirror share a common vertex and all mirrors share a common axis as provided by Wetherell et al does not disclose that the secondary mirror is able to move for the purpose of focusing. However, the use of an optical device having a primary system and a secondary system for receiving and guiding light from an object to a receiving system wherein either the receiving system or the secondary system is moved for the purpose of focusing is known to one skilled in the art as can be seen in the optical device provided by Pinson. In particular, in column 3 and claim 3, Pinson discloses the movement of the secondary mirror for the purpose of adjusting the focus of the system. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the optical system provided by Wetherell et al by moving the secondary mirror as suggested by Pinson for the purpose of focusing.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

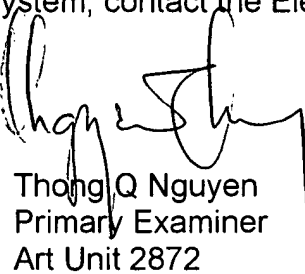
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thong Q Nguyen whose telephone number is (571) 272-2316. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

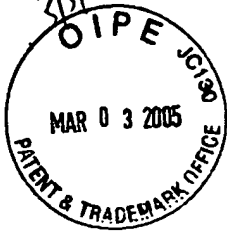
Art Unit: 2872

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Thong Q. Nguyen
Primary Examiner
Art Unit 2872

*Ex by amendment
5/11/05*



2/3

Appl. No. 10/662,200
Amdt. Dated Feb. 28, 2005
Reply to Office Action of October 27, 2004
Replacement Sheet

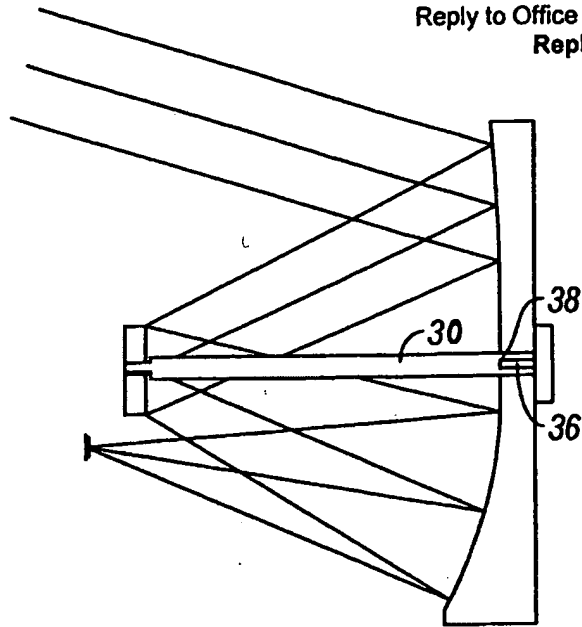


FIG. 2

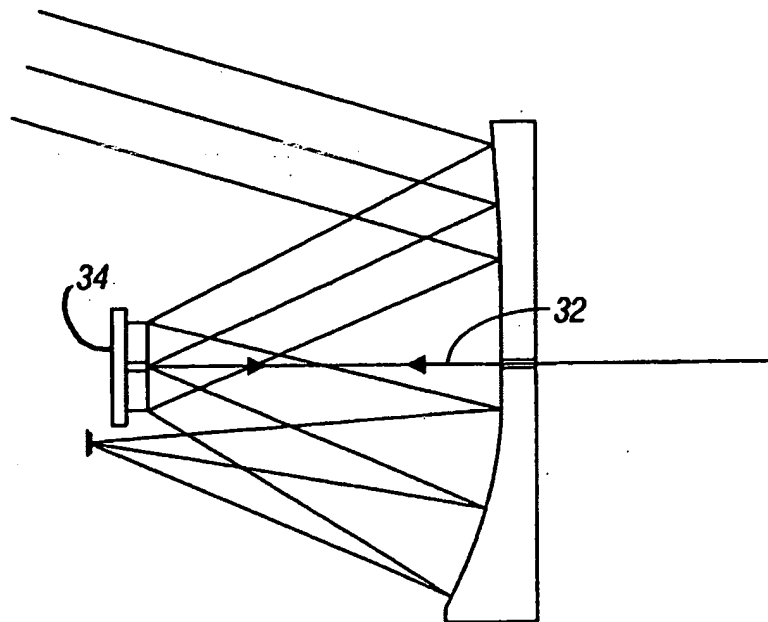


FIG. 3